



Caza Operating LLC

Mad River 13 State 9H

Mad River 13 State 9H

Mad River 13 State 9H

Mad River 13 State 9H

Plan: 190214 Mad River 13 State 9H

Morcor Standard Plan

14 February, 2019

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DISTRICT II-ARTESIA O.C.D.



Morcor Engineering
Morcor Standard Plan

Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Mad River 13 State 9H
Project:	Mad River 13 State 9H	TVD Reference:	WELL @ 3124.0usft (Original Well Elev)
Site:	Mad River 13 State 9H	MD Reference:	WELL @ 3124.0usft (Original Well Elev)
Well:	Mad River 13 State 9H	North Reference:	Grid
Wellbore:	Mad River 13 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	190214 Mad River 13 State 9H	Database:	EDM 5000.1 Single User Db

Project	Mad River 13 State 9H		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Mad River 13 State 9H		
Site Position:		Northing:	440,923.64 usft
From:	Lat/Long	Easting:	602,346.32 usft
Position Uncertainty:	1.0 usft	Slot Radius:	17-1/2 "
		Latitude:	32° 12' 43.279 N
		Longitude:	104° 8' 9.845 W
		Grid Convergence:	0.11 °

Well	Mad River 13 State 9H		
Well Position	+N-S	0.0 usft	Northing: 440,923.64 usft
	+E-W	0.0 usft	Easting: 602,346.32 usft
Position Uncertainty		1.0 usft	Wellhead Elevation: usft
			Latitude: 32° 12' 43.279 N
			Longitude: 104° 8' 9.845 W
			Ground Level: 3,102.0 usft

Wellbore	Mad River 13 State 9H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/14/2019	6.90	59.89	47,788

Design	190214 Mad River 13 State 9H			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)
	0.0	0.0	0.0	268.35

Survey Tool Program	Date 2/14/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	13,465.0	190214 Mad River 13 State 9H (Mad River	MWD	MWD - Standard



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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	-3,124.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
100.0	0.00	93.50	100.0	-3,024.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
120.0	0.00	93.50	120.0	-3,004.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
20"										
200.0	0.00	93.50	200.0	-2,924.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
300.0	0.00	93.50	300.0	-2,824.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
400.0	0.00	93.50	400.0	-2,724.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
500.0	0.00	93.50	500.0	-2,624.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
600.0	0.00	93.50	600.0	-2,524.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
700.0	0.00	93.50	700.0	-2,424.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
728.0	0.00	93.50	728.0	-2,396.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
13 3/8"										
753.0	0.00	93.50	753.0	-2,371.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
Salado										
800.0	0.00	93.50	800.0	-2,324.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
900.0	0.00	93.50	900.0	-2,224.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
1,000.0	0.00	93.50	1,000.0	-2,124.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
1,100.0	0.00	93.50	1,100.0	-2,024.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
1,200.0	0.00	93.50	1,200.0	-1,924.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
1,300.0	0.00	93.50	1,300.0	-1,824.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
1,400.0	0.00	93.50	1,400.0	-1,724.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
1,500.0	0.00	93.50	1,500.0	-1,624.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
1,600.0	0.00	93.50	1,600.0	-1,524.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
1,700.0	0.00	93.50	1,700.0	-1,424.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
1,800.0	0.00	93.50	1,800.0	-1,324.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
1,900.0	0.00	93.50	1,900.0	-1,224.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
2,000.0	0.00	93.50	2,000.0	-1,124.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00
2,100.0	0.00	93.50	2,100.0	-1,024.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00



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Design:	190214 Mad River 13 State 9H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)	
2,200.0	0.00	93.50	2,200.0	-924.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,208.0	0.00	93.50	2,208.0	-916.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
Base of Salt											
2,300.0	0.00	93.50	2,300.0	-824.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,388.0	0.00	93.50	2,388.0	-736.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
9 5/8"											
2,400.0	0.00	93.50	2,400.0	-724.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,413.0	0.00	93.50	2,413.0	-711.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
Delaware											
2,500.0	0.00	93.50	2,500.0	-624.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,600.0	0.00	93.50	2,600.0	-524.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,700.0	0.00	93.50	2,700.0	-424.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,800.0	0.00	93.50	2,800.0	-324.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,900.0	0.00	93.50	2,900.0	-224.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,000.0	0.00	93.50	3,000.0	-124.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,048.0	0.00	93.50	3,048.0	-76.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
Cherry Canyon											
3,100.0	0.00	93.50	3,100.0	-24.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,200.0	0.00	93.50	3,200.0	76.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,300.0	0.00	93.50	3,300.0	176.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,400.0	0.00	93.50	3,400.0	276.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,500.0	0.00	93.50	3,500.0	376.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,600.0	0.00	93.50	3,600.0	476.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,700.0	0.00	93.50	3,700.0	576.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,800.0	0.00	93.50	3,800.0	676.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,900.0	0.00	93.50	3,900.0	776.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,000.0	0.00	93.50	4,000.0	876.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,100.0	0.00	93.50	4,100.0	976.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	



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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)	
4,200.0	0.00	93.50	4,200.0	1,076.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,300.0	0.00	93.50	4,300.0	1,176.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,349.0	0.00	93.50	4,349.0	1,225.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
Brushy Canyon											
4,400.0	0.00	93.50	4,400.0	1,276.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,500.0	0.00	93.50	4,500.0	1,376.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,600.0	0.00	93.50	4,600.0	1,476.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,700.0	0.00	93.50	4,700.0	1,576.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,800.0	0.00	93.50	4,800.0	1,676.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,900.0	0.00	93.50	4,900.0	1,776.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,000.0	0.00	93.50	5,000.0	1,876.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,100.0	0.00	93.50	5,100.0	1,976.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,200.0	0.00	93.50	5,200.0	2,076.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,300.0	0.00	93.50	5,300.0	2,176.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,400.0	0.00	93.50	5,400.0	2,276.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,500.0	0.00	93.50	5,500.0	2,376.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,600.0	0.00	93.50	5,600.0	2,476.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,700.0	0.00	93.50	5,700.0	2,576.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,800.0	0.00	93.50	5,800.0	2,676.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,900.0	0.00	93.50	5,900.0	2,776.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,939.0	0.00	93.50	5,939.0	2,815.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
Bone Spring											
5,950.0	0.00	93.50	5,950.0	2,826.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
Start Build 3.00											
6,000.0	1.50	93.50	6,000.0	2,876.0	0.0	0.7	602,346.97	440,923.60	-0.65	3.00	
6,100.0	4.50	93.50	6,099.8	2,975.8	-0.4	5.9	602,352.19	440,923.28	-5.86	3.00	



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6,150.0	6.00	93.50	6,149.6	3,025.6	-0.6	10.4	602,356.76	440,923.00	-10.42	3.00
Start 1336.0 hold at 6150.0 MD										
6,200.0	6.00	93.50	6,199.4	3,075.4	-1.0	15.7	602,361.98	440,922.68	-15.63	0.00
6,300.0	6.00	93.50	6,298.8	3,174.8	-1.6	26.1	602,372.41	440,922.04	-26.04	0.00
6,400.0	6.00	93.50	6,398.3	3,274.3	-2.2	36.5	602,382.84	440,921.41	-36.45	0.00
6,500.0	6.00	93.50	6,497.7	3,373.7	-2.9	47.0	602,393.28	440,920.77	-46.86	0.00
6,600.0	6.00	93.50	6,597.2	3,473.2	-3.5	57.4	602,403.71	440,920.13	-57.27	0.00
6,700.0	6.00	93.50	6,696.6	3,572.6	-4.1	67.8	602,414.14	440,919.49	-67.68	0.00
6,800.0	6.00	93.50	6,796.1	3,672.1	-4.8	78.3	602,424.58	440,918.85	-78.09	0.00
6,900.0	6.00	93.50	6,895.5	3,771.5	-5.4	88.7	602,435.01	440,918.22	-88.50	0.00
6,900.5	6.00	93.50	6,896.0	3,772.0	-5.4	88.7	602,435.06	440,918.21	-88.55	0.00
1st Bone Spring Sand										
7,000.0	6.00	93.50	6,995.0	3,871.0	-6.1	99.1	602,445.44	440,917.58	-98.91	0.00
7,100.0	6.00	93.50	7,094.4	3,970.4	-6.7	109.6	602,455.88	440,916.94	-109.32	0.00
7,200.0	6.00	93.50	7,193.9	4,069.9	-7.3	120.0	602,466.31	440,916.30	-119.73	0.00
7,300.0	6.00	93.50	7,293.3	4,169.3	-8.0	130.4	602,476.74	440,915.66	-130.14	0.00
7,400.0	6.00	93.50	7,392.8	4,268.8	-8.6	140.9	602,487.18	440,915.03	-140.55	0.00
7,486.0	6.00	93.50	7,478.3	4,354.3	-9.2	149.8	602,496.15	440,914.48	-149.51	0.00
Start Drop -3.00										
7,500.0	5.58	93.50	7,492.2	4,368.2	-9.3	151.2	602,497.56	440,914.39	-150.91	3.00
7,600.0	2.58	93.50	7,592.0	4,468.0	-9.7	158.3	602,504.66	440,913.96	-158.00	3.00
7,649.0	1.11	93.50	7,641.0	4,517.0	-9.8	159.9	602,506.24	440,913.86	-159.57	3.00
2nd Bone Spring Sand										
7,686.0	0.00	0.00	7,678.0	4,554.0	-9.8	160.3	602,506.59	440,913.84	-159.93	3.00
Start 100.0 hold at 7686.0 MD										
7,700.0	0.00	268.50	7,692.0	4,568.0	-9.8	160.3	602,506.59	440,913.84	-159.93	0.00
7,786.0	0.00	268.50	7,778.0	4,654.0	-9.8	160.3	602,506.59	440,913.84	-159.93	0.00
Start Build 8.00										



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7,800.0	1.12	268.50	7,791.9	4,667.9	-9.8	160.1	602,506.46	440,913.83	-159.79	8.00
7,886.0	8.00	268.50	7,877.6	4,753.6	-10.0	153.3	602,499.62	440,913.66	-152.96	8.00
Start Build 9.00										
7,900.0	9.26	268.50	7,891.5	4,767.5	-10.0	151.2	602,497.52	440,913.60	-150.85	9.00
7,986.0	17.00	268.50	7,975.2	4,851.2	-10.6	131.7	602,478.01	440,913.09	-131.33	9.00
Start Build 10.00										
8,000.0	18.40	268.50	7,988.5	4,864.5	-10.7	127.4	602,473.76	440,912.98	-127.08	10.00
8,086.0	27.00	268.50	8,067.8	4,943.8	-11.5	94.3	602,440.61	440,912.11	-93.92	10.00
Start Build 11.00										
8,100.0	28.54	268.50	8,080.1	4,956.1	-11.7	87.8	602,434.09	440,911.94	-87.40	11.00
8,186.0	38.00	268.50	8,152.0	5,028.0	-12.9	40.7	602,386.98	440,910.71	-40.27	11.00
Start Build 12.00										
8,200.0	39.68	268.50	8,162.9	5,038.9	-13.2	31.9	602,378.20	440,910.48	-31.49	12.00
8,286.0	50.00	268.50	8,223.8	5,099.8	-14.8	-28.7	602,317.67	440,908.89	29.07	12.00
Start Build 12.00										
8,300.0	51.68	268.50	8,232.6	5,108.6	-15.0	-39.5	602,306.81	440,908.61	39.92	12.00
8,370.3	60.12	268.50	8,272.0	5,148.0	-16.6	-97.7	602,248.66	440,907.08	98.10	12.00
Harkey Sand										
8,400.0	63.68	268.50	8,286.0	5,162.0	-17.2	-123.8	602,222.49	440,906.40	124.27	12.00
8,500.0	75.68	268.50	8,320.6	5,196.6	-19.7	-217.4	602,128.92	440,903.95	217.88	12.00
8,586.0	86.00	268.50	8,334.3	5,210.3	-21.9	-302.2	602,044.16	440,901.73	302.67	12.00
Start Build 12.66										
8,600.0	87.77	268.50	8,335.1	5,211.1	-22.3	-316.1	602,030.18	440,901.36	316.65	12.66
8,630.0	91.57	268.50	8,335.2	5,211.2	-23.1	-346.1	602,000.20	440,900.58	346.64	12.66
Start 4835.0 hold at 8630.0 MD										
8,700.0	91.57	268.50	8,333.3	5,209.3	-24.9	-416.1	601,930.25	440,898.75	416.61	0.00
8,800.0	91.57	268.50	8,330.6	5,206.6	-27.5	-516.0	601,830.32	440,896.13	516.57	0.00
8,900.0	91.57	268.50	8,327.8	5,203.8	-30.1	-615.9	601,730.39	440,893.51	616.54	0.00



Morcor Engineering
Morcor Standard Plan

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Site:	Mad River 13 State 9H	MD Reference:	WELL @ 3124.0usft (Original Well Elev)
Well:	Mad River 13 State 9H	North Reference:	Grid
Wellbore:	Mad River 13 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	190214 Mad River 13 State 9H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)	
9,000.0	91.57	268.50	8,325.1	5,201.1	-32.7	-715.9	601,630.47	440,890.90	716.50	0.00	
9,100.0	91.57	268.50	8,322.4	5,198.4	-35.4	-815.8	601,530.54	440,888.28	816.46	0.00	
9,200.0	91.57	268.50	8,319.6	5,195.6	-38.0	-915.7	601,430.61	440,885.66	916.42	0.00	
9,300.0	91.57	268.50	8,316.9	5,192.9	-40.6	-1,015.6	601,330.68	440,883.05	1,016.39	0.00	
9,400.0	91.57	268.50	8,314.1	5,190.1	-43.2	-1,115.6	601,230.75	440,880.43	1,116.35	0.00	
9,500.0	91.57	268.50	8,311.4	5,187.4	-45.8	-1,215.5	601,130.82	440,877.81	1,216.31	0.00	
9,600.0	91.57	268.50	8,308.7	5,184.7	-48.4	-1,315.4	601,030.90	440,875.20	1,316.27	0.00	
9,700.0	91.57	268.50	8,305.9	5,181.9	-51.1	-1,415.3	600,930.97	440,872.58	1,416.23	0.00	
9,800.0	91.57	268.50	8,303.2	5,179.2	-53.7	-1,515.3	600,831.04	440,869.96	1,516.20	0.00	
9,900.0	91.57	268.50	8,300.4	5,176.4	-56.3	-1,615.2	600,731.11	440,867.35	1,616.16	0.00	
10,000.0	91.57	268.50	8,297.7	5,173.7	-58.9	-1,715.1	600,631.18	440,864.73	1,716.12	0.00	
10,100.0	91.57	268.50	8,295.0	5,171.0	-61.5	-1,815.1	600,531.26	440,862.11	1,816.08	0.00	
10,200.0	91.57	268.50	8,292.2	5,168.2	-64.1	-1,915.0	600,431.33	440,859.49	1,916.04	0.00	
10,300.0	91.57	268.50	8,289.5	5,165.5	-66.8	-2,014.9	600,331.40	440,856.88	2,016.01	0.00	
10,400.0	91.57	268.50	8,286.7	5,162.7	-69.4	-2,114.8	600,231.47	440,854.26	2,115.97	0.00	
10,500.0	91.57	268.50	8,284.0	5,160.0	-72.0	-2,214.8	600,131.54	440,851.64	2,215.93	0.00	
10,600.0	91.57	268.50	8,281.3	5,157.3	-74.6	-2,314.7	600,031.61	440,849.03	2,315.89	0.00	
10,700.0	91.57	268.50	8,278.5	5,154.5	-77.2	-2,414.6	599,931.69	440,846.41	2,415.85	0.00	
10,800.0	91.57	268.50	8,275.8	5,151.8	-79.8	-2,514.6	599,831.76	440,843.79	2,515.82	0.00	
10,900.0	91.57	268.50	8,273.0	5,149.0	-82.5	-2,614.5	599,731.83	440,841.18	2,615.78	0.00	
11,000.0	91.57	268.50	8,270.3	5,146.3	-85.1	-2,714.4	599,631.90	440,838.56	2,715.74	0.00	
11,100.0	91.57	268.50	8,267.6	5,143.6	-87.7	-2,814.3	599,531.97	440,835.94	2,815.70	0.00	
11,200.0	91.57	268.50	8,264.8	5,140.8	-90.3	-2,914.3	599,432.04	440,833.33	2,915.66	0.00	
11,300.0	91.57	268.50	8,262.1	5,138.1	-92.9	-3,014.2	599,332.12	440,830.71	3,015.63	0.00	
11,400.0	91.57	268.50	8,259.4	5,135.4	-95.5	-3,114.1	599,232.19	440,828.09	3,115.59	0.00	
11,500.0	91.57	268.50	8,256.6	5,132.6	-98.2	-3,214.1	599,132.26	440,825.48	3,215.55	0.00	
11,600.0	91.57	268.50	8,253.9	5,129.9	-100.8	-3,314.0	599,032.33	440,822.86	3,315.51	0.00	



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Site:	Mad River 13 State 9H	MD Reference:	WELL @ 3124.0usft (Original Well Elev)
Well:	Mad River 13 State 9H	North Reference:	Grid
Wellbore:	Mad River 13 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	190214 Mad River 13 State 9H	Database:	EDM 5000.1 Single User Db

Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
11,700.0	91.57	268.50	8,251.1	5,127.1	-103.4	-3,413.9	598,932.40	440,820.24	3,415.48	0.00
11,800.0	91.57	268.50	8,248.4	5,124.4	-106.0	-3,513.8	598,832.48	440,817.63	3,515.44	0.00
11,900.0	91.57	268.50	8,245.7	5,121.7	-108.6	-3,613.8	598,732.55	440,815.01	3,615.40	0.00
12,000.0	91.57	268.50	8,242.9	5,118.9	-111.2	-3,713.7	598,632.62	440,812.39	3,715.36	0.00
12,100.0	91.57	268.50	8,240.2	5,116.2	-113.9	-3,813.6	598,532.69	440,809.78	3,815.32	0.00
12,200.0	91.57	268.50	8,237.4	5,113.4	-116.5	-3,913.6	598,432.76	440,807.16	3,915.29	0.00
12,300.0	91.57	268.50	8,234.7	5,110.7	-119.1	-4,013.5	598,332.83	440,804.54	4,015.25	0.00
12,400.0	91.57	268.50	8,232.0	5,108.0	-121.7	-4,113.4	598,232.91	440,801.93	4,115.21	0.00
12,500.0	91.57	268.50	8,229.2	5,105.2	-124.3	-4,213.3	598,132.98	440,799.31	4,215.17	0.00
12,600.0	91.57	268.50	8,226.5	5,102.5	-126.9	-4,313.3	598,033.05	440,796.69	4,315.13	0.00
12,700.0	91.57	268.50	8,223.7	5,099.7	-129.6	-4,413.2	597,933.12	440,794.08	4,415.10	0.00
12,800.0	91.57	268.50	8,221.0	5,097.0	-132.2	-4,513.1	597,833.19	440,791.46	4,515.06	0.00
12,900.0	91.57	268.50	8,218.3	5,094.3	-134.8	-4,613.1	597,733.27	440,788.84	4,615.02	0.00
13,000.0	91.57	268.50	8,215.5	5,091.5	-137.4	-4,713.0	597,633.34	440,786.23	4,714.98	0.00
13,100.0	91.57	268.50	8,212.8	5,088.8	-140.0	-4,812.9	597,533.41	440,783.61	4,814.94	0.00
13,200.0	91.57	268.50	8,210.0	5,086.0	-142.6	-4,912.8	597,433.48	440,780.99	4,914.91	0.00
13,300.0	91.57	268.50	8,207.3	5,083.3	-145.3	-5,012.8	597,333.55	440,778.38	5,014.87	0.00
13,400.0	91.57	268.50	8,204.6	5,080.6	-147.9	-5,112.7	597,233.62	440,775.76	5,114.83	0.00
13,465.0	91.57	268.50	8,202.8	5,078.8	-149.6	-5,177.6	597,168.67	440,774.06	5,179.81	0.00
TD at 13465.0 - 5 1/2"										



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Wellbore:	Mad River 13 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	190214 Mad River 13 State 9H	Database:	EDM 5000.1 Single User Db

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
120.0	120.0	20"	20	26	
2,388.0	2,388.0	9 5/8"	9-5/8	12-1/4	
13,465.0	8,202.8	5 1/2"	5-1/2	8-3/4	
728.0	728.0	13 3/8"	13-3/8	17-1/2	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,649.0	7,641.0	2nd Bone Spring Sand		0.00	
8,370.3	8,272.0	Harkey Sand		0.00	
2,413.0	2,413.0	Delaware		0.00	
753.0	753.0	Salado		0.00	
5,939.0	5,939.0	Bone Spring		0.00	
2,208.0	2,208.0	Base of Salt		0.00	
4,349.0	4,349.0	Brushy Canyon		0.00	
6,900.5	6,896.0	1st Bone Spring Sand		0.00	
3,048.0	3,048.0	Cherry Canyon		0.00	



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Site:	Mad River 13 State 9H	MD Reference:	WELL @ 3124.0usft (Original Well Elev)
Well:	Mad River 13 State 9H	North Reference:	Grid
Wellbore:	Mad River 13 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	190214 Mad River 13 State 9H	Database:	EDM 5000.1 Single User Db

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
5,950.0	5,950.0	0.0	0.0	Start Build 3.00	
6,150.0	6,149.6	-0.6	10.4	Start 1336.0 hold at 6150.0 MD	
7,486.0	7,478.3	-9.2	149.8	Start Drop -3.00	
7,686.0	7,678.0	-9.8	160.3	Start 100.0 hold at 7686.0 MD	
7,786.0	7,778.0	-9.8	160.3	Start Build 8.00	
7,886.0	7,877.6	-10.0	153.3	Start Build 9.00	
7,986.0	7,975.2	-10.6	131.7	Start Build 10.00	
8,086.0	8,067.8	-11.5	94.3	Start Build 11.00	
8,186.0	8,152.0	-12.9	40.7	Start Build 12.00	
8,286.0	8,223.8	-14.8	-28.7	Start Build 12.00	
8,586.0	8,334.3	-21.9	-302.2	Start Build 12.66	
8,630.0	8,335.2	-23.1	-346.1	Start 4835.0 hold at 8630.0 MD	
13,465.0	8,202.8	-149.6	-5,177.6	TD at 13465.0	

Checked By: _____	Approved By: _____	Date: _____
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Project: Mad River 13 State 9H
 Site: Mad River 13 State 9H
 Well: Mad River 13 State 9H
 Wellbore: Mad River 13 State 9H
 Design: 190214 Mad River 13 State 9H



Azimuths to Grid North
 True North: -0.10°
 Magnetic North: 6.80°

Magnetic Field
 Strength: 47787.8snT
 Dip Angle: 59.89°
 Date: 2/14/2019
 Model: IGRF2010

CASING DETAILS

TVD	MD	Name	Size
120.0	120.0	20"	20
728.0	728.0	13 3/8"	13-3/8
2388.0	2388.0	9 5/8"	9-5/8
8202.8	13465.0	5 1/2"	5-1/2

FORMATION TOP DETAILS

TVDPATH	MDPATH	Formation	DipAngle	DipDir
753.0	753.0	Salado	0.00	
2208.0	2208.0	Base of Salt	0.00	
2413.0	2413.0	Delaware	0.00	
3048.0	3048.0	Cherry Canyon	0.00	
4349.0	4349.0	Brushy Canyon	0.00	
5939.0	5939.0	Bone Spring	0.00	
6896.0	6900.5	1st Bone Spring Sand	0.00	
7641.0	7649.0	2nd Bone Spring Sand	0.00	
8272.0	8370.3	Harkey Sand	0.00	

